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| NEWS 2 | Jan 25 | BLAST(R) searching in REGISTRY available in STN on the Web |
| NEWS 3 | Jan 29 | FSTA has been reloaded and moves to weekly updates |
| NEWS 4 | Feb 01 | DKILIT now produced by FIZ Karlsruhe and has a new update frequency |
| NEWS 5 | Feb 19 | Access via Tymnet and SprintNet Eliminated Effective 3/31/02 |
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| NEWS 7 | Mar 22 | TOXLIT no longer available |
| NEWS 8 | Mar 22 | TRCTHERMO no longer available |
| NEWS 9 | Mar 28 | US Provisional Priorities searched with P in CA/CAplus and USPATFULL |
| NEWS 10 | Mar 28 | LIPINSKI/CALC added for property searching in REGISTRY |
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| NEWS 17 | Apr 22 | BIOSIS Gene Names now available in TOXCENTER |
| NEWS 18 | Apr 22 | Federal Research in Progress (FEDRIP) now available |

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=> s trypsin#
L4        4684 TRYPSIN#

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L5           0 L1 AND L2 AND L3 AND L4

=> s l1 and l2 and l4
L6          34 L1 AND L2 AND L4

=> d 1-34 all

L6   ANSWER 1 OF 34  FSTA  COPYRIGHT 2002 IFIS
AN   2002:P0050   FSTA
TI   Controlled hydrolysis of cheese whey proteins using
     trypsin and .alpha.-chymotrypsin.
AU   Galvao, C. M. A.; Souza Silva, A. F.; Custodio, M. F.; Monti, R.;
     Giordano, R. de L. C.
CS   Correspondence (Reprint) address, R. de L. C. Giordano, Dep. de Eng.
     Quimica, Univ. Fed. de Sao Carlos, CP 676, CEP 13565-905, Sao Carlos, SP,
     Brazil.  E-mail raquel(a)deq.ufscar.br
SO   Applied Biochemistry and Biotechnology, (2001), 91-93, 761-776, 18 ref.
     ISSN: 0273-2289
DT   Journal
LA   English
AB   Production of protein hydrolysates with controlled composition from
     cheese whey proteins was examined.  Cheese
     whey was characterized and several hydrolysis experiments were
     carried out using whey proteins and purified
     .beta.-lactoglobulin, as substrates, and trypsin and
     .alpha.-chymotrypsin, (EC 3.4.21.4 and EC 3.4.21.1, respectively) as
     catalysts, at 40 or 55.degree.C and several enzyme concn.  Max. degrees of
     hydrolysis obtained experimentally were compared with the theoretical
     values, and peptide compositions were determined.  For trypsin,
     a 100% yield was achieved whereas for .alpha.-chymotrypsin, hydrolysis
     seemed to be dependent on the oligopeptide size.  Results showed that the
     2 proteinases could hydrolyse .beta.-lactoglobulin.  Trypsin and
     .alpha.-chymotrypsin were stable at 40.degree.C, but a sharp decrease in
     proteinase activity was observed at 55.degree.C.
CC   P (Milk and Dairy Products)
CT   LACTOGLOBULINS; PROTEINASES; PROTEINS; PROTEINS MILK; WHEY;  Nb
     -LACTOGLOBULIN; CHYMOTRYPSIN; HYDROLYSIS; PROTEIN HYDROLYSATES;
     TRYPSIN; WHEY PROTEINS
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L6 ANSWER 2 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 2002:G0319 FSTA
TI Preparation and nutritional evaluation of legume-**whey** weaning food.
AU El-Adawy, T. A.; Rahma, E. H.; El-Bedawy, A. A.; Sobihah, T. Y.
CS Food Sci. & Tech. Dep., Fac. of Agric., Menofiya Univ., Shibin El-Kom, Egypt
SO Egyptian Journal of Food Science, (2001), 29 (2) 109-137, 39 ref.
ISSN: 0301-8571
DT Journal
LA English
SL Arabic
AB Weaning foods, prepared by vacuum drying blends of Kareish **cheese whey** and locally available legumes (beans, soybeans and sweet lupins), were examined for composition, nutritional values and microbiological quality. In all weaning food formulas, concn. of protein, fat and ash were higher and concn. of dietary fibre were lower than those specified in Egyptian standards for weaning foods. Formulas were able to supply daily requirements for most minerals with the exception of Ca and P. Soy **whey** formula (SWF) had the highest content of reducing sugars (25.07%) and lowest content of starch (12.23%) and raffinose (0.22 mg/g). SWF had the lowest free fatty acid content, and TBA and peroxide values, while bean **whey** formula (BWF) had the highest (0.91 vs. 1.42% (as oleic acid), 0.42 vs. 0.50 mg/kg and 0.80 vs. 2.52 m-equiv./kg, respectively). All formulas were free from haemagglutinin activity. Lupin **whey** formula (LWF) was free from **trypsin** inhibitor activity and had the lowest tannin and highest phytic acid contents (0.04 and 2.98 mg/g, respectively). In vitro protein digestibility was highest in LWF and lowest in BWF (76.69 vs. 71.84%), although BWF had the highest content of available lysine (4.24 g/16 g N). Equilibrium moisture content increased in all formulas with increasing RH. Microbiological quality was acceptable with total counts ranging from 15 x 10.sup.3 to 55 x 10.sup.3 cells/g. It is concluded that Kareish **whey** and local legumes can be used as an inexpensive means of producing weaning foods of good nutritional and microbiological quality.
CC G (Catering, Speciality and Multicomponent Foods)
CT BEANS; FOOD SAFETY; INFANT FOODS; LUPINS; MICROBIOLOGICAL QUALITY; NUTRITIONAL VALUES; SOYBEANS; **WHEY; CHEESE WHEY;** COMPOSITION; WEANING FOODS

L6 ANSWER 3 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 2001(01):P0117 FSTA
TI Structural analysis of new antihypertensive peptides derived from **cheese whey** protein by proteinase K digestion.
AU Abubakar, A.; Saito, T.; Kitazawa, H.; Kawai, Y.; Itoh, T.
CS Lab. of Animal Products Chem., Graduate Sch. of Agric. Sci., Tohoku Univ., Tsutsumidori-Amamiyamachi 1-1, Aoba-ku, Sendai 981-8555, Japan
SO Journal of Dairy Science, (1998), 81 (12) 3131-3138, 20 ref.
ISSN: 0022-0302
DT Journal
LA English
AB **Whey** protein was digested with 1 of 7 proteinases at 37.degree.C (**trypsin**, proteinase K, actinase E, thermolysin or papain) or 25.degree.C (pepsin or chymotrypsin) for 24 h. The digests were assayed for inhibitory activity against angiotensin-converting enzyme (peptidyl-dipeptidase A) and for effects on systolic blood pressure in spontaneously hypertensive rats after gastric intubation. The strongest depressive effect on systolic blood pressure (-55 mmHg) was observed at 6 h after gastric intubation of **whey** protein digested with proteinase K. 6 peptides were chromatographically isolated from proteinase K digest by hydrophobic RP-HPLC and gel filtration. Amino acid sequences and their origins were as follows: Val-Tyr-Pro-Phe-Pro-Gly

[.beta.-casein (CN); f 59-64]; Gly-Lys-Pro (.beta..sub.2-microglobulin; f 18-20); Ile-Pro-Ala (.beta.-lactoglobulin; f 78-80); Phe-Pro (serum albumin; f 221-222; .beta.-CN, f 62-63, f 157-158, and f 205-206); Val-Tyr-Pro (.beta.-CN; f 59-61); and Thr-Pro-Val-Val-Val-Pro-Pro-Phe-Leu-Gln-Pro (.beta.-CN; f 80-90). Chemical synthesis of the 6 peptides confirmed that all peptides, except an undecapeptide, have antihypertensive activity in spontaneously hypertensive rats. The synthetic tripeptide Ile-Pro-Ala showed the strongest antihypertensive activity (-31 mmHg).

CC P (Milk and Dairy Products)

CT HEALTH; PEPTIDES; **WHEY**; ANTIHYPERTENSIVE ACTIVITY

L6 ANSWER 4 OF 34 FSTA COPYRIGHT 2002 IFIS

AN 2000(11):P1680 FSTA

TI Effects of soybean saponin on protease hydrolyses of .beta.-lactoglobulin and .alpha.-lactalbumin.

AU Shimoyamada, M.; Ootsubo, R.; Naruse, T.; Watanabe, K.

CS Lab. of Food Material Eng., Fac. of Agric., Gifu Univ., Gifu 501-1193, Japan. Fax +81-58-293-2928. E-mail saponin(a)cc.gifu-u.ac.jp

SO Bioscience, Biotechnology, and Biochemistry, (2000), 64 (4) 891-893, 11 ref.
ISSN: 0916-8451

DT Journal

LA English

AB As part of an investigation into the recycling of **whey** produced as a waste product in **cheese** processing, effects of soybean saponin on tryptic and chymotryptic hydrolyses of **whey** proteins, isolated from **cheese whey** wastes, were evaluated. .beta.-Lactoglobulin and .alpha.-lactalbumin became more sensitive to both **trypsin** and chymotrypsin by interacting with 2 mg/ml saponin in contrast to effect of serum albumin. Soybean saponin had different effects on **whey** proteins depending on the individual structural and chemical properties of the protein.

CC P (Milk and Dairy Products)

CT GLYCOSIDES; LACTALBUMINS; LACTOGLOBULINS; PROTEINASES; **WHEY**; Na -LACTALBUMIN; Nb -LACTOGLOBULIN; **CHEESE WHEY**; HYDROLYSIS; SAPONINS

L6 ANSWER 5 OF 34 FSTA COPYRIGHT 2002 IFIS

AN 1999(11):P1614 FSTA

TI Controlled **whey** protein hydrolysis using two alternative proteases.

AU Pintado, M. E.; Pintado, A. E.; Malcata, F. X.

CS Correspondence (Reprint) address, F. X. Malcata, Escola Superior de Biotecnologia, Univ. Catolica Portuguesa, P-4200-072 Porto, Portugal. Tel. +351-2-5580004. Fax +351-2-590351

SO Journal of Food Engineering, (1999), 42 (1) 1-13, 27 ref.
ISSN: 0260-8774

DT Journal

LA English

AB Hydrolysis of **cheese whey** using 2 types of commercial proteinases (**trypsin** and protease 2A) was investigated. Skimmed **whey** was pasteurized (62.degree.C, 15 min) and protease 2A or **trypsin** was added at 2 concn. (20 or 40 g/kg substrate). Experiments were conducted for 12 h at optimal conditions for each enzyme (protease A, 45.degree.C, pH 7; **trypsin**, 37.degree.C, pH 8); samples were obtained every 2 h and assayed for microbial counts, amino acid concn., total acidity, peptide profile and enzymic activity. Degree of hydrolysis was higher with higher concn. of both enzymes; protease 2A produced a hydrolysate containing higher levels of free amino acids (probably as a result of its lower specificity), while **trypsin** produced a hydrolysate with higher levels of peptides. Changes in

qualitative composition of amino acids were most pronounced between 2 and 6 h with protease 2A; Leu showed the highest increase followed by Lys, Phe and Ile. With **trypsin**, increased levels of Lys were produced. **Trypsin** hydrolysis resulted in more extensive formation of peptides than hydrolysis with protease 2A; peptides formed by **trypsin** mainly fell into the 4000-4500 and 7500-8000 Da size ranges. Differences in characteristics of **trypsin** and protease 2A hydrolysates with time were significantly different in terms of all experimental parameters except for Glu concn. and amount of peptide fraction produced from immunoglobulin G and .beta.-lactoglobulin. It was demonstrated that growth of adventitious bacteria and formation of free amino acids can be modelled using simple unstructured and unsegregated models.

CC P (Milk and Dairy Products)

CT AMINO ACIDS; MICROBIOLOGICAL TECHNIQUES; PEPTIDES; PROTEINASES; **WHEY**; HYDROLYSIS; MICROBIAL COUNTS

L6 ANSWER 6 OF 34 FSTA COPYRIGHT 2002 IFIS

AN 1999(07):P0859 FSTA

TI Mozzarella made by ultrafiltration.

AU Madsen, J. S.; Qvist, K. B.

CS Cheese Science '98 Symposium; Dep. of Dairy & Food Sci., Royal Vet. & Agric. Univ., DK-1958 Frederiksberg, Denmark. E-mail jsma(a)kvl.dk

SO Australian Journal of Dairy Technology, (1998), 53 (2) 112, 4 ref. ISSN: 0004-9433

DT Conference

LA English

AB To improve the meltability of Mozzarella **cheese** made from ultrafiltered (UF) milk, enzymic hydrolysis of proteins was investigated. Enzymes tested were porcine **trypsin**, Bacillus licheniformis proteinase (BLP) and B. subtilis proteinase (Neutrase). BLP hydrolysis improved meltability of UF Mozzarella **cheese** without formation of off-flavours. Capillary electrophoresis revealed that **whey** proteins were not hydrolysed by any of the proteins, suggesting that the improved meltability was due to casein hydrolysis. [Abstracts of further contributions from this conference are published in electronic formats of the FSTA database and may be traced via the corporate authors (CA) field, under **Cheese** Science '98 [Symposium]. See also 1999-Pj814.]

CC P (Milk and Dairy Products)

CT **CHEESE VARIETIES**; MELTING; PROTEINASES; ULTRAFILTRATION; MELTABILITY; **MOZZARELLA CHEESE**

L6 ANSWER 7 OF 34 FSTA COPYRIGHT 2002 IFIS

AN 1998(09):P1496 FSTA

TI Inhibitory activity against plasmin, **trypsin**, and elastase in rennet **whey** and in **cheese** fortified with **whey** protein.

AU Benfeldt, C.; Sorensen, J.; Petersen, T. E.

CS MD Foods Res. & Dev. Cent., Rordrumvej 2, DK-8220 Brabrand, Denmark

SO Journal of Dairy Science, (1998), 81 (3) 615-620, 24 ref. ISSN: 0022-0302

DT Journal

LA English

AB The inhibitory activity against **trypsin**, elastase and plasmin was determined in samples of Danbo 45+ [**cheese**] that were manufactured from milk pasteurized at 72, 80 or 90.degree.C for 15, 30 and 60 s, the corresponding rennet **wheys**, and Havarti 45+ [**cheese**] manufactured from milk concentrated 1.8, 2.7 or 4.6x by ultrafiltration. A sensitive colorimetric assay demonstrated that the incorporation of thermally denatured **whey** proteins into the **cheese** curd by pasteurization resulted in a decreased proteinase inhibitory activity against **trypsin** and elastase in Danbo 45+

and against **trypsin**, elastase and plasmin in the corresponding rennet **wheys**. However, incorporation of native **whey** proteins into Havarti 45+ by ultrafiltration of the **cheese** milk resulted in an increased inhibitory activity against **trypsin** and elastase in the **cheeses**. **Cheese** manufactured from milk concentrated 1.8, 2.7 or 4.6x displayed **trypsin** inhibitory activity that was 1.8-, 2.9- and 5.1x, respectively, that of the reference **cheese**. Similarly, the elastase inhibitory activity in the **cheeses** increased 2.2-, 3.2- and 7.8x. It is concluded that the increased inhibitory activity in **cheese** fortified with native **whey** protein likely contributes to the decreased proteolysis and altered ripening characteristics of the resulting **cheeses** and, further, the method can be adapted to detect other inhibitors if sufficiently sensitive substrates are available.

CC P (Milk and Dairy Products)

CT **CHEESE VARIETIES**; ENZYME INHIBITORS; MILK; PASTEURIZATION; ULTRAFILTRATION; **WHEY**; **CHEESE MILK**; **CHEESE WHEY**; PROTEINASES INHIBITORS

L6 ANSWER 8 OF 34 FSTA COPYRIGHT 2002 IFIS

AN 1998(05):P0907 FSTA

TI Development of a new type of fermented **cheese whey** beverage with inhibitory effects against angiotensin-converting enzyme.

AU Saito, T.; Abubakar, A.; Itoh, T.; Arai, I.; Aimar, M. V.

CS Lab. of Animal Products Chem., Graduate Sch. of Agric., Tohoku Univ., Aoba-ku, Sendai 981, Japan

SO Tohoku Journal of Agricultural Research, (1997), 48 (1/2) 15-23, 19 ref. ISSN: 0040-8719

DT Journal

LA English

AB [Angiotensin I-converting enzyme (ACE, peptidyl-dipeptidase A; EC 3.4.15.1) has an important role in the control of blood pressure. The antihypertensive properties of foods with ACE inhibitory activity may make them useful as functional foods. In this study, a new type of cultured **cheese whey** beverage with ACE inhibitory activity was developed.] **Cheese whey** was digested with 7 kinds of proteases for 24 h at 37.degree.C (**trypsin**, proteinase-K, actinase-E, thermolysin and papain) or 25.degree.C (pepsin and chymotrypsin). Strong inhibitory activity of >95% against ACE of rabbit lung was generated by proteinase-K and thermolysin digestion. The digested **cheese whey** was then fermented at 37.degree.C for 24 h with 2% (v/v) inoculum of 2 kinds of lactic acid bacterial culture (1% each of Lactobacillus delbrueckii spp. bulgaricus and Streptococcus thermophilus). Through the comparison of the ACE inhibitory activity before and after lactic acid fermentation, proteinase-K was selected as the most suitable enzyme among the 7 proteases tested, because it showed almost no decrease in activity after fermentation (from 89.9 to 89.8%). Based on the results of the preliminary experiments, a new type of fermented **cheese whey** beverage containing ACE activity was prepared. The IC.sub.5.sub.0 value in the fermented **cheese whey** beverage was 50 ng/ml.

CC P (Milk and Dairy Products)

CT BEVERAGES; FERMENTED DAIRY PRODUCTS; PROTEINASES; **WHEY**; PEPTIDYL-DIPEPTIDASE A; **WHEY BEVERAGES**

L6 ANSWER 9 OF 34 FSTA COPYRIGHT 2002 IFIS

AN 1997(07):P0110 FSTA

TI New derivation of the inhibitory activity against angiotensin converting enzyme (ACE) from sweet **cheese whey**.

AU Abubakar, A.; Saito, T.; Aimar, M. V.; Itoh, T.

CS Lab. of Animal Products Chem., Dep. of Applied Bio-Sci., Fac. of Agric., Tohoku Univ., Sendai 981, Japan

SO Tohoku Journal of Agricultural Research, (1996), 47 (1/2) 1-8, 19 ref.
ISSN: 0040-8719
DT Journal
LA English
AB Three kinds of samples [**whey** protein (WP) containing caseinoglycopeptide (CGP+), WP-removed CGP (CGP-), and **cheese whey** powder (CWP)] were digested with 7 kinds of proteases at 37.degree.C for 24 hr (**trypsin**, proteinase-K, actinase-E, thermolysin and papain) or 25.degree.C (pepsin and chymotrypsin). Strong inhibitory activity against the angiotensin-converting enzyme (ACE, EC. 3.4.15.1) was generated in all samples by 5 proteases digestion (pepsin, chymotrypsin, proteinase-K, thermolysin and papain). In WP (CGP+), the most potent inhibitors (91.91%) were derived by papain digestion, and in WP (CGP-), digestion by thermolysin induced the highest activity (95.23%). In CWP, the highest activity was derived by thermolysin (98.56%). On the other hand, weak ACE inhibitory activity was derived by **trypsin** and actinase-E digestion. As no remarkable differences in inhibitory activity were observed between WP (CGP+) and WP (CGP-) samples, the bioactive peptides are considered to come mainly not from CGP but from WP components, such as .beta.-lactoglobulin, .alpha.-lactalbumin, serum albumin and/or immunoglobulins. A similar development pattern in the activity between WP (CGP+) and CWP suggested that lactose and minerals do not contribute to the activity in CWP.
CC P (Milk and Dairy Products)
CT DAIRY PRODUCTS; ENZYMES; PROTEINASES; PROTEOLYSIS; **WHEY**; PEPTIDYL-DIPEPTIDASE A

L6 ANSWER 10 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 1997(04):P0021 FSTA
TI The bioactive peptides derived from proteolysis of bovine .beta.-lactoglobulin and the use of hydrolysates in hypoallergenic infant formulas.
.beta.-Laktoglobuliinin proteolyysissa vapautuvat bioaktiiviset peptidit seka hydrolysaattien kaytto hypoallergeenisiin aidinmaidonkorvikkeisiin.
AU Rinta-Koski, M.
CS Dep. of Food Tech., Fac. of Agric. & Forestry, Univ. of Helsinki, SF 00014 Helsinki, Finland
SO Helsingin Yliopisto Elintarvikealan Koulutusohjelman Tutkimuksia, (1996), No. 1022, 84pp., many ref.
ISSN: 0355-1180
DT Dissertation
LA Finnish
SL English
AB In the literature review section of this thesis, properties of .beta.-lactoglobulin (.beta.-Lg), use of **whey** protein hydrolysates in hypoallergenic infant formulas and bioactive peptides derived from milk proteins are discussed. Proteolysis in vitro of bovine .beta.-Lg by gastric enzymes to produce the bioactive peptide .beta.-lactotensin (fragment 146-149, His-Ile-Arg-Leu) was investigated. Edam **cheese whey** .beta.-Lg was digested with pepsin, **trypsin** or chymotrypsin (alone or in combination with pepsin) for 3 or 24 h. Reaction conditions were: protein concn. 0.3%; enzyme to protein ratio 1:200; pH 2 or 8; and temp. 37.degree.C. Results showed that .beta.-Lg is very resistant to gastric digestion. Although the degree of proteolysis of .beta.-Lg by chymotrypsin was very low, it was sufficient for release of .beta.-lactotensin; the bioactive peptide was released at a rate of 4 mg/g proteolysed protein by 3 h of proteolysis with chymotrypsin alone. .beta.-Lactotensin had a contracting effect on guinea pig ileum smooth muscle. [From En summ.]
CC P (Milk and Dairy Products)
CT ENZYMES; HUMAN PHYSIOLOGY; LACTOGLOBULINS; PEPTIDES; PROTEINASES; PROTEINS; PROTEOLYSIS; Nb -LACTOGLOBULIN; PHYSIOLOGICAL EFFECTS

L6 ANSWER 11 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 1996(11):P0145 FSTA
TI Effect of process parameters on structure-function relations of Cheddar **cheese**.
AU Muthukumarappan, K.; Bogenrief, D. D.; Gunasekaran, S.; Olson, N. F.
CS United States of America, Institute of Food Technologists 1996 Annual Meeting; Dep. of Agric. Eng., Univ. of Wisconsin, Madison, WI 53706, USA
SO (1996), 1996 IFT annual meeting: book of abstracts, p. 9 ISSN 1082-1236 ISSN: 1082-1236
DT Conference
LA English
AB Cheddar **cheeses** were made with various levels of fat, moisture, curd pH at draining of **whey**, chymosin and **trypsin**, and with 2 curd handling methods (stirred vs. milled). **Cheese** microstructure was evaluated and distribution and geometry of fat globules in **cheeses** were quantified. Rheological properties and functional properties were also assessed. Microstructural attributes were related to rheological and functional characteristics. Effect of ripening (up to 6 months) was also studied, via proteolysis determinations using gel electrophoresis. Fat globule size, shape and various other functional properties varied significantly with fat level. [From En summ. Further abstracts of papers/posters presented at this meeting are covered in electronic formats of the FSTA database and may be traced via the corporate authors (CA) field, under United States of America, Institute of Food Technologists [1996 Annual Meeting]. See also FSTA (1996) 28 11A2.]
CC P (Milk and Dairy Products)
CT **CHEESE VARIETIES**; CHEESEMAKING; DAIRY PRODUCTS; FUNCTIONAL PROPERTIES; PHYSICAL PROPERTIES; PROCESSING; RHEOLOGICAL PROPERTIES; **CHEDDAR CHEESE**; MICROSTRUCTURE

L6 ANSWER 12 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 1986(12):G0026 FSTA
TI [Preliminary note on preparation and analysis of coprecipitates from mixtures of soy protein and **whey** treated with proteases.]
AU Pallavicini, C.; Trentin, G.
CS Istituto di Ind. Agrarie, 70126 Bari, Italy
SO Industrie Alimentari, (1986), 25 (235) 113-118, 19 ref.
DT Journal
LA Italian
SL English
AB (i) a soy protein isolate containing 92% protein from CICAM (Milan, Italy); (ii) a sample of Mozzarella **cheese whey** (pH 6.1, DM 6.36%, total protein 0.90%); and samples of pepsin, chymotrypsin, **trypsin**, papain, bromelain and ficin, from Sigma, and alcalase from Novo Enzimi Italia, Milan, were used in the tests. In preliminary tests, 2mM cysteine were added to (ii), pH was adjusted to 4-9, 1-8% (i) was added, the mixture was pre-incubated for 10 min at 37.degree. C, and aqueous solutions of the named enzymes were added at 1:1500. The mixture was incubated for 1-6 h at 37.degree. C, 0.1% citric acid was added, and the coprecipitate formed was separated by centrifugation, and freeze-dried. Papain and alcalase gave the best yields. Optimal conditions were found in further detailed tests to be 3% of (i), pH 7.5, incubation for 4 h, and 37.degree. C temp. The coprecipitate contained 98% protein, consisting of all the (i) protein and approx. 60% of the **whey** proteins. Electrophoretic profiles of the 2 coprecipitates are presented.
CC G (Catering, Speciality and Multicomponent Foods)
CT PROTEINS MILK; SOY PROTEINS; **WHEY**; **SOY PROTEIN-WHEY PROTEIN COPRECIPITATES**

L6 ANSWER 13 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 1985(01):P0155 FSTA

TI [Traditional utilization of milk in Asia. II. Changes in fatty acid and protein composition accompanying treatment of **cheeses**.]
AU Ochi, T.; Matsumoto, N.; Hatakeyama, E.; Saito, T.
CS Lab. of Food Hygiene, Tohoku Social Welfare Univ., Kunimi, Sendai 980, Japan
SO Journal of the Agricultural Chemical Society of Japan [Nihon Nogei Kagakkai-shi], (1983), 57 (9) 881-890, 27 ref.
DT Journal
LA Japanese
SL English
AB Changes in the composition of fatty acids and proteins caused by defatting and sun-drying during manufacture were examined in Oriental **cheeses**. Results were compared with European **cheeses** and some samples produced in the laboratory. Techniques used included GLC and polyacrylamide gel electrophoresis. Fat content of Hurood, Johi and Churbi **cheeses** was low compared with European **cheeses**. Oriental **cheeses** were characterized by a large quantity of palmitic acid and a small quantity of oleic acid. Ratio of stearic acid to oleic acid was approx. 1:3 in European **cheeses**. In Oriental **cheeses**, there was little oxidation of fatty acids and change in peroxide values caused by sun-drying during manufacture. Electrophoretograms after sun-drying showed no significant change in protein composition of various types of **cheeses**. The phoretograms also revealed the variety of sources of milk from which Oriental **cheeses** were made. Bovine milk was mainly used for Hurood and Churbi **cheeses**. Goats' milk and/or mares' milk was probably used for Johi and Urum **cheeses**, because they lacked a bovine .alpha..sub.s.sub.1-casein band in the phoretogram. The casein components in these Oriental **cheeses** were not enzymically hydrolysed. **Trypsin** digestion and heating, as additional stages in the manufacturing process for Oriental **cheeses**, produced casein components of low mol. wt. It is suggested that quality of Oriental **cheeses** might be improved by proteolysis and lactic acid fermentation. Protein components were scarcely lost by **whey** draining, and complete utilization of protein in milk was possible by this method. [See FSTA (1984) 16 11P2396 for part I.]
CC P (Milk and Dairy Products)
CT ACIDS; **CHEESE**; CHEESEMAKING; FATTY ACIDS; PROTEINS; PROTEINS MILK; **CHEESES SPECIFIC**; CHURBI; **CHURBI CHEESE**; COMPOSITION # ORIENTAL; HUROOD; **HUROOD CHEESE**; JOHI; **JOHI CHEESE**; PROTEINS-FATTY # COMPOSITION

L6 ANSWER 14 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 1984(02):P0297 FSTA
TI Effect of different proteases on **whey** proteins.
AU Angelo, I. A.; Shahani, K. M.; Kilara, A.
CS Nat. Dairy Res. Inst., Karnal, India
SO Milchwissenschaft, (1982), 37 (4) 212-215, 18 ref.
DT Journal
LA English
SL German
AB In ideal conditions of pH, buffer, cofactors, ionic strength, reaction temp., etc., pepsin, **trypsin** and papain hydrolysed, resp., 92, 83 and 68% of protein in demineralized, delactosed dried **whey**; corresponding figures in unbuffered aqueous systems were 62, 58 and 47%. These enzymes and chymotrypsin hydrolysed 50-59% of protein in fresh Cheddar **cheese whey** and 41-52% of proteins in **whey** previously held at 95.degree. C for 1 h. Amino acid analyses and Sephadex G-100 gel filtration patterns of **whey** proteins remaining unhydrolysed after enzyme treatment indicated that papain resulted in a greater number of smaller mol. wt. proteinaceous fractions while chymotrypsin and **trypsin** resulted in relatively large mol. wt. fractions. Extent of proteolysis by soluble and immobilized papain,

resp., was 87 and 88% in **whey** protein concentrate, 76 and 60% in rennet **whey**, and 87 and 71% in acid **whey**.
CC P (Milk and Dairy Products)
CT PROTEINASES; PROTEINS MILK; PROTEOLYSIS; **WHEY**; HYDROLYSIS; PAPAIN; PATTERNS; PEPSIN; PEPSINS; **TRYPSIN**; **WHEY PROTEINS**

L6 ANSWER 15 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 1983(11):G0822 FSTA
TI Soy-**whey** weaning food. I. Method of manufacture.
AU Kapoor, C. M.; Gupta, S. K.
CS Coll. of Anim. Sci., Haryana Agric. Univ., Hissar, Haryana, India
SO Journal of Food Science and Technology, India, (1981), 18 (2) 55-58, 20 ref.
DT Journal
LA English
AB A weaning food rich in protein (22.9%) was prepared using soybean and **cheese whey**. Manufacturing method consisted of soaking, blanching and dehulling soybeans, grinding the soy-**whey** mixture, adding oil and oil-soluble vitamins, homogenizing, spray-drying, fortifying with other vitamins, flavouring and packaging. The soy: **whey** solids ratio of 35:65 and 2-stage homogenization at 3000 and 500 lb/in.sup.2 were optimum. Solubility index was 7.3 ml, bulk density 0.656 g/ml, and viscosity (10% TS in water) 2.029 cP at 30.degree. C. Product was free from **trypsin** inhibitor activity and was acceptable with or without added flavour.
CC G (Catering, Speciality and Multicomponent Foods)
CT INFANT FOODS; SOY PRODUCTS; **WHEY**; **SOY-WHEY WEANING FOODS**; WEANING FOODS

L6 ANSWER 16 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 1983(05):A0318 FSTA
TI [Fifth Brazilian Congress on food science and technology.] V Congresso Brasileiro de ciencia e tecnologia de alimentos.
AU Morais, A. G.; Cavalcanti, A. C.; Bobbio, P. A.; Bobbio, F. O.; Tosello, J. C.; Vieira, R. H. S. F.; Vieira, G. H. F.; Quesado, A. M. N.; Vilela, E. R.; El-Dash, A. A.; Faria, J. A. F.; Costa, S. I.; Donida, C. O.; Miguel, M. H.; Rocha, J. L. V.; Canhos, V. P.; Scamparini, A. R. P.; Yamada, R.; Aoyama, H. M.; Llisto, A. M. S. M.; Pigati, P.; Souza, L. G.; Marcondes, D. D. A. S.; Souza, M. C. P.; Maia, G. A.; Garruti, R. S.; Chedid, J.; Tosello, Y.; Modesta, R. C. della; Ribeiro, A. S. M. G.; C
CS Brazil, Sociedade Brasileira de Ciencia e Tecnologia de Alimentos; Vicosa, Minas Gerais, Brazil; Imprensa Universitaria da Universidade Federal de Vicosa
SO (1981), 203pp.
DT Conference
LA Portuguese
AB [Continued from preceding abstr.] Salted dried shark as a substitute for salted dried cod, by A. G. Morais & A. C. Cavalcanti (p. 178). Relative absorption of water on carbohydrates, by P. A. Bobbio, F. O. Bobbio & J. C. Tosello (p. 179). Purification of the mollusc Mytela falcata, by R. H. S. F. Vieira, G. H. F. Vieira & A. M. N. Quesado (p. 180). Production of pigeon pea flour by dry milling, by E. R. Vilela & A. A. El-Dash (pp. 181-182). Methods and instruments for study of stability of foods susceptible to oxidation, by J. A. F. Faria (p. 183). Soybean extract production and uses, by S. I. Costa & C. O. Donida (p. 184). Storage stability of intermediate moisture bananas, by M. H. Miguel & J. L. V. Rocha (p. 186). Use of xanthan gum for stabilization of long shelf-life yoghurt, by A. R. P. Scamparini, V. P. Canhos, R. Yamada & H. M. Aoyama (p. 187). Persistance of residues of dimethoate and fentoate in cottonseed, by A. M. S. M. Llisto, P. Pigati, L. G. Souza & D. D. A. S. Marcondes (p. 188). Sensory evaluation of 'buriti' (Mauritia vinifera)

nectar, by M. C. P. Souza & G. A. Maia (p. 189). Flavour thresholds for constituents of distilled beverages, by R. S. Garruti, J. Chedid & Y. Tosello (p. 190). Sensory and nutritional studies on various soybean cv. in 6 regions of Brazil. III. Sensory studies, by R. C. D. Modesta & R. S. Garruti (p. 191). Coliforms in 'Minas Frescal' **cheese**. Evaluation of methods for enumeration and isolation, by A. S. M. G. Ribeiro & E. P. Carvalho (pp. 193-194). Characterization of **trypsin** inhibitors of kidney beans, by U. M. L. Marquez & F. M. Lajolo (p. 195). Relation of nucleic acid N concn. to total N and protein N concn. in Rhizopus oligosporus cultured on **cheese whey**, by C. A. Moraes, J. R. Nicoli & D. O. Silva (p. 196). Studies on preparation of sauerkraut from cabbages of the cv. Matsukase at various stages of maturity: sensory evaluation, by J. S. Goldoni, A. A. Silva, M. M. Mischan & I. A. Bonassi (p. 197). [Continued in following abstr.]

CC A (Food Sciences)

CT CONFERENCE PROCEEDINGS; FOOD SCIENCE; FOOD SCIENCE-TECHNOLOGY; PROCEEDINGS

L6 ANSWER 17 OF 34 FSTA COPYRIGHT 2002 IFIS

AN 1983(03):P0515 FSTA

TI Effect of adding **trypsin** and pepsin to brine solution on the ripening of White Soft **Cheese**.

AU Ismail, A. A.; El-Koussy, L.; Mostafa, R. A.

CS Dairy & Food Tech. Lab., Nat. Res. Cent., Dokki, Egypt

SO Egyptian Journal of Food Science, (1980, publ. 1982), 8 (1/2) 13-20, 19 ref.

DT Journal

LA English

SL Arabic

AB Batches of Domiati **cheese** were pickled in their own **whey** after it had been salted at 7 or 10% and treated with 0, 0.1 or 0.2 g **trypsin** or 0, 0.05 or 0.1 g pepsin/300 g **cheese**. Moisture content of all **cheeses** decreased during storage at room temp. for 12 wk, decrease being greatest in enzyme-treated pickling solution. Increasing the salt content of the pickling solution from 7 to 10% decreased fat % of the **cheese**, whilst addition of enzymes tended to increase fat %. Acidity developed more rapidly when the enzymes were present. At the lower enzyme concn. in 10% salted **whey**, **cheese** of good organoleptic quality was obtained after 4-8 wk, but showed a gradual deterioration of flavour thereafter. Abnormal flavour developed in **cheese** pickled in 7% salted **whey** at the higher enzyme concn.

CC P (Milk and Dairy Products)

CT BRINING; **CHEESE**; **CHEESE VARIETIES**; ENZYMES; PROCESSING; RIPENING; BRINING-ENZYMES; BRINING-ENZYMES # WHITE SOFT; **CHEESES SPECIFIC**; **SOFT CHEESE**; WHITE SOFT; **WHITE SOFT CHEESE**

L6 ANSWER 18 OF 34 FSTA COPYRIGHT 2002 IFIS

AN 1980(07):G0499 FSTA

TI The effect of coagulants on protein content and amino acid composition of soybean-**cheese whey** curd.

AU Yao, M.-L.; Peng, A. C.

CS Ohio State Univ., 190 North Oval Drive, Columbus, Ohio 43210, USA

SO Research Circular. Ohio Agricultural Research and Development Center, (1979), No. 250, 48-51, 11 ref.

DT Journal

LA English

AB Soybean milk, prepared from an aqueous slurry of ground beans (final meal: water ratio 1:10 w/w), was boiled for .gtoreq.15 min to destroy any **trypsin** inhibitor present. A sodium **cheese whey** protein concentrate was dispersed in hot water at a ratio of 1:10 w/v. The soybean milk and **cheese whey** preparation were then

mixed in ratios ranging from 100:0 to 0:100. Curd was prepared from these mixtures by adding coagulants (selected after preliminary evaluation of several coagulants for their suitability for curd production). The coagulants used were (w/v): (i) 0.6% glucono-delta-lactone (GDL); (ii) 0.6% GDL + 0.05% CaSO.sub.4; and (iii) 0.6% GDL + 0.17% MgCl.sub.2. The curd formed was allowed to stand for 30 min, then the serum was separated by straining through **cheese** cloth and the curd subjected to pressure (0.036 lb/in.sup.2) for 15 min. The pressed curd was then examined for aroma (by a taste panel), textural properties (by a penetrometer), pH, moisture content, yield, protein content and amino acid composition. A soybean curd prepared with 0.25% CaSO.sub.4 served as a control. Results indicated that the soybean milk/**cheese whey** curds studied have acceptable aroma and texture, a good yield, acceptable moisture and protein contents and a promising amino acid composition. It is suggested that the curds could provide an inexpensive source of protein and could also form the basis of new food products such as non-dairy yoghurt and pie fillings. The product is covered by US Patent 4 105 803 of 8 Aug., 1978 [see FSTA (1979) 11 8G645].

CC G (Catering, Speciality and Multicomponent Foods)

CT ADDITIVES; COAGULATION; CURD; LACTONES; PROTEIN PRODUCTS; SOY PRODUCTS; **WHEY**; COAGULANTS; GLUCONO- Ne -LACTONE; QUALITY; **SOY MILK-CHEESE**; **SOY MILK-CHEESE WHEY CURD**; **SOY MILK-CHEESE WHEY PROTEIN PRODUCTS**

L6 ANSWER 19 OF 34 FSTA COPYRIGHT 2002 IFIS

AN 1980(05):P0858 FSTA

TI [Proteolysis of **whey** proteins in application to lactose technology.]

AU Yatsenko, A. M.; Khramtsov, A. G.; Umanskii, M. S.; Bessalova, N. G.; Loginova, L. G.; Vybornykh, S. N.

SO Trudy, Vsesoyuznyi Nauchno-issledovatel'skii Institut Maslodel'noi i Syrodel'noi Promyshlennosti Nauchno-proizvodstvennogo Ob''edineniya 'Uglich', (1978), No. 26, 51-56, 85-86, 11 ref.

DT Journal

LA Russian

AB Proteolysis was studied in **cheese whey** using 4 different enzymes at pH 7.0 and 55.degree. or 60.degree. C over periods of up to 24 h. The rate of hydrolysis was highest with all 4 enzymes during the 1st hour, the protein degradation being as follows: Thermoactinomyces vulgaris, 83.6% (rising to 97.1% after 4 h); Actinomyces thermovulgaris, 50.6% (rising to 82.1% after 24 h); pancreatin, 39.1% (rising to 66.7% after 4 h); and **trypsin**, 50.0% (rising to 74.6% after 24 h). It is suggested that the possibility of using proteolytic enzymes in the manufacture of lactose be examined.

CC P (Milk and Dairy Products)

CT **CHEESE**; LACTOSE; PROTEINASES; **WHEY**; **CHEESE WHEY**; PROTEOLYTIC ENZYMES

L6 ANSWER 20 OF 34 FSTA COPYRIGHT 2002 IFIS

AN 1980(01):P0190 FSTA

TI [Study of proteolytic enzyme hydrolysis of proteins of **cheese whey** used for lactose production.]
In ''Intensifikatsiya Protsessov Proizvodstva Natural'nykh Syrov i Sovershenstvovanie ikh Tekhnologii'' [see FSTA (1980) 12 1P109].

AU Khramtsov, A. G.; Yatsenko, A. M.; Umanskii, M. S.; Union of Soviet Socialist Republics Erevanskii Zootekhnichesko-veterinarnyi Institut [Symposium]

CS Severo-Kavkazskii Filial VNIIMS, Stavropol', USSR

SO (1977), pp. 135-136

DT Conference

LA Russian

AB Pancreatin, **trypsin** and 2 enzyme preparations from

Thermoactinomyces vulgaris and Actinomyces thermovulgaris were tested for protein hydrolysis at 55-60.degree. C in **cheese whey** neutralized to pH 7 by addition of 10% NaOH solution. No further details of procedure are given. % hydrolysis were, resp., 66, 74, 97 and 80.
CC P (Milk and Dairy Products)
CT **CHEESE**; LACTOSE; PROTEINS; PROTEINS MILK; PROTEOLYSIS; **WHEY**; **CHEESE WHEY**; HYDROLYSIS; **WHEY PROTEINS**

L6 ANSWER 21 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 1979(08):G0645 FSTA
TI Soybean-**cheese whey** food product.
IN Peng, A. C.
PA United States of America, Ohio Agricultural Research & Development Centre
SO United States Patent, (1978)
PI US 4105803
DT Patent
LA English
AB An aqueous 1:1 mixture of **cheese whey** protein concentrate and soybean milk concentrate (the latter having been heated separately to deactivate **trypsin** inhibitor) is heated to <110.degree. C before the addition of 0.6% glucono-delta-lactone in order to precipitate a soybean-**whey** curd from the aqueous mixture. The resultant product is a white, soft, gelatinous mass with a bland aroma, desirable moisture content and advantageous amino acid composition.
CC G (Catering, Speciality and Multicomponent Foods)
CT CURD; PATENTS; SOY PRODUCTS; **WHEY**; PATENT; **SOY WHEY CURD PRODUCTS**; UNITED STATES OF AMERICA; USA

L6 ANSWER 22 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 1979(06):P0952 FSTA
TI Solubilization of **cheese whey** protein by **trypsin** and a process to recover the active enzyme from the digest.
AU Monti, J. C.; Jost, R.
CS Res. Dep., Nestle Products Tech. Assistance Co. Ltd., CH-1814 La Tour-de-Peilz, Switzerland
SO Biotechnology and Bioengineering, (1978), 20 (8) 1173-1185, 17 ref.
DT Journal
LA English
AB Porcine **trypsin** (EC 3.4.4.4) converted, within approx. 2 h at 50.degree. C, its 1000-fold wt. of water-insoluble, heat-denaturated **cheese whey** protein into a water-soluble product. In the course of this digestion, the enzyme increased the .alpha.-amino N of the protein by a factor of >20, from 0.40 to 9.40%. After digesting the water-insoluble **whey** protein, fully active **trypsin** could be recovered from the soluble digest with the aid of a cellulose-based affinity adsorbent. The enzyme which was eluted from a column of p-aminobenzamidine, bound to succinylated aminododecylcellulose, was fully active and showed essentially unchanged kinetic properties with a synthetic substrate, L -benzoyl-arginine p-nitroanilide. It was possible to perform, with the same amount of **trypsin**, 3 subsequent and equally effective solubilizations of **whey** protein, followed by a 4th digestion which still yielded a soluble product, but was considerably slower and incomplete. During each digestion, an estimated 30% of the **trypsin** was lost. The loss was not due to a decreased efficiency of the affinity adsorbent, as its **trypsin**-binding capacity was essentially unaffected after >10 cycles of use.
CC P (Milk and Dairy Products)
CT **CHEESE**; PROTEINASES; PROTEINS; PROTEINS MILK; SOLUBILITY; **WHEY**; **CHEESE WHEY**; **CHEESE WHEY PROTEINS**; SOLUBILIZATION; **TRYPSIN**; **WHEY PROTEINS**

L6 ANSWER 23 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 1979(03):P0398 FSTA
TI Enzymatic solubilization of heat-denatured **cheese whey** protein.
AU Monti, J. C.; Jost, R.
CS Res. Dep., Nestle Products Tech. Assistance Co. Ltd., Case Postale 1009, Lausanne, CH-1001, Switzerland
SO Journal of Dairy Science, (1978), 61 (9) 1233-1237, 11 ref.
DT Journal
LA English
AB Resolubilization of heat-denatured **cheese whey** protein was achieved by partial enzymic hydrolysis of the protein with food-grade proteases. The efficiency with which porcine **trypsin**, papain and neutral protease from Bacillus subtilis solubilized the water-insoluble protein was compared by measuring the % of water-soluble N of the corresponding digests. The tryptic digest was completely soluble at neutral pH and was >90% water-soluble at pH 6.0. This digest had a pronounced solubility min. of 65% at pH 4.5. Neutral protease gave a digest with similar pH dependence of the solubility, but the % of water-soluble N were all below those of the tryptic digest. Papain gave a digest with max. solubility at pH 3.0 and approx. 80% solubility at neutral pH. The solubility min. was again at pH 4.5. **Trypsin** proved the most potent protease for solubilizing heat-denatured **whey** protein. With this enzyme, a water-soluble **whey** protein preparation was obtained which contained 13.2% N, 4.53% fat, 2.6% moisture, 0.23% lactose and 2.9% ash.
CC P (Milk and Dairy Products)
CT **CHEESE**; DENATURATION; HEATING; PROTEINASES; PROTEINS; PROTEINS MILK; SOLUBILITY; **WHEY**; **CHEESE WHEY**; **CHEESE WHEY PROTEINS**; DENATURED; HEAT; SOLUBILIZATION; **WHEY PROTEINS**

L6 ANSWER 24 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 1975(01):J0094 FSTA
TI [Manufacture of a **cheese**-like product from soybean milk. II. Changes in **trypsin** inhibitor activity during heat treatment and curd formation from soybean milk.]
AU Matsuoka, H.; Sasago, K.
CS Tachikawa Coll., Akishima, Tokyo, Japan
SO Journal of Food Science and Technology [Nihon Shokuhin Kogyo Gakkai-shi], (1972), 19 (6) 262-267, 8 ref.
DT Journal
LA Japanese
SL English
AB Heating soybean milk samples of concn. 5, 10 and 15% at 100.degree.C for 10 min, at 100.degree.C for 20 min, at 120.degree.C for 10 min, or at 120.degree.C for 20 min decreased the **trypsin** inhibitor (TI) activity to 32.8-33.9, 27.4-31.3, 10.8-15.1 and 3.5-8.1%, respectively. TI activity (units/mg DM) was 0.31 and 0.05 in **whey** samples heated at 100.degree.C for 10 min or 120.degree.C for 20 min respectively. In curd samples, the corresponding figures were 0.19 and 0.09. The total TI activity was higher in curd than in **whey**. Penicillium casei-colum used as the starter to prepare a **cheese**-like product from soybean milk produced 3 proteases with optimum pH at 6.5 and 7.6. Proteinase activities were scarcely inhibited by adding raw soybean milk or curd made from heated soybean milk. [See Journal of Food Science and Technology, Japan (1968) 15 (3) 103 for part I.]
CC J (Fruits, Vegetables and Nuts)
CT CURD; ENZYME INHIBITORS; HEATING; MILK; PROTEINASES; SOYBEANS; DECREASE; HEATED; INHIBITORY SUBSTANCES; SOY; SOY MILK; **TRYPSIN**; **TRYPSIN INHIBITORS**

L6 ANSWER 25 OF 34 FSTA COPYRIGHT 2002 IFIS

AN 1974(09):P1260 FSTA
TI The use of casein and **whey** protein hydrolysates in white soft **cheese** making.
AU Hofi, A. A.; Mahran, G. A.; Farahat, S. M.; Ashour, M.; Khorshid, M. A.
CS Food Sci. Dept., Fac. of Agric., Ein-Shams Univ., Cairo, United Arab Republic
SO Egyptian Journal of Dairy Science, (1973), 1 (2) 159-162, 7 ref.
DT Journal
LA English
SL Arabic
AB Pickled Domiati **cheese**, the National soft type in Egypt, normally acquires its characteristic flavour within a ripening period of 2-3 months. That pickling period was reduced to 2 wk by treating **cheese** milk with 0.5% casein acid hydrolysate to 4 wk by using 0.125% **whey** protein acid hydrolysate and to 8 wk by using 0.125% tryptic hydrolysate of casein or **whey** protein. Peptic hydrolysates of casein and **whey** protein yielded **cheeses** that were bitter and of inferior qualities.
CC P (Milk and Dairy Products)
CT CASEIN; **CHEESE**; **CHEESE VARIETIES**; CHEESEMAKING; FLAVOUR; PICKLING; PROTEINASES; RIPENING; **WHEY**; DOMIATI; **DOMIATI CHEESE**; HYDROLYSATE; PEPSIN; PEPSINS; PEPTIC; **TRYPSIN**; TRYPTIC

L6 ANSWER 26 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 1973(09):P1290 FSTA
TI Abstracts of papers to be presented at the Sixty-Eighth Annual Meeting of the American Dairy Science Association, Washington State University, Pullman, June 24-27, 1973. Manufacturing section. Enzymes.
AU Skura, V.; Bakri, M.; Holmes, D. G.; Ernstrom, C. A.; Lim, R. S.; Dinesen, N.; Ashworth, U. S.; Iwasaki, T.; Kosikowski, F. V.; Jolly, R.; Senyk, G. F.; Lee, E. C.; Shipe, W. F.; White, C. H.; Marshall, R. T.; Cheng, W. S.; Gelda, C. S.; Swaisgood, H. E.; Janolino, V. G.
CS USA, American Dairy Science Association
SO Journal of Dairy Science, (1973), 56 (5) 622-625
DT Journal
LA English
AB The following papers are included in this section: Curd tension as a measure of the secondary phase of enzymatic clotting of milk, by V. Skura & M. Bakri (M6); Distribution of milk-clotting enzymes between curd and **whey**, and their survival during cheddar **cheese** making, by D. G. Holmes & C. A. Ernstrom (M7); Low concentration assay of milk-clotting enzymes, by D. G. Holmes & C. A. Ernstrom (M8); Determination of individual enzyme content in liquid commercial milk coagulating enzyme blends, by R. S. Lim & N. Dinesen (M9); Purification of chymosin (rennin), by M. Bakri & U. S. Ashworth (M10); Increasing flavor in **cheese** with commercial microbial enzyme preparations, by T. Iwasaki & F. V. Kosikowski (M11); Flavor and chemical changes in blue **cheese** by microbial lipases, by R. Jolly & F. V. Kosikowski (M12); **Trypsin** immobilized on tygon tubing, by G. F. Senyk, E. C. Lee & W. F. Shipe (M13); Operational stability of glass-bound **trypsin**, by E. C. Lee, G. F. Senyk & W. F. Shipe (M14); Heat stable protease from Pseudomonas fluorescens P26 degrades ultra-high temperature pasteurized milk, by C. H. White & R. T. Marshall (M15); Proteolytic enzymes in ultra-high temperature treated and aseptically canned 10% cream, by W. S. Cheng % C. S. Gelda (M16); and Purification and effects of enzyme concentration on properties of sulfydryl oxidase, by H. E. Swaisgood & V. G. Janolino (M17). [Continued in following abstr.]
CC P (Milk and Dairy Products)
CT CHEESEMAKING; COAGULATION; CREAM; ENZYMES; MILK; PROTEINASES; CANNED CREAM; CLOTTING; ENZYMATIC; MICROBIAL; PROTEOLYTIC; PROTEOLYTIC # UHT; PROTEOLYTIC ENZYMES; STERILIZED MILK; STERILIZED MILKS; UHT MILK

L6 ANSWER 27 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 1973(08):P1239 FSTA
TI An experimental continuous-culture unit for the production of frozen concentrated **cheese** starters.
AU Lloyd, G. T.; Pont, E. G.
CS Dairy Res. Lab., Div. of Food Res., CSIRO, Melbourne, Australia
SO Journal of Dairy Research, (1973), 40 (2) 149-155, 19 ref.
DT Journal
LA English
AB Equipment and methods are described for the production, on a laboratory scale, of frozen conc. **cheese** starters. A single-stage Porton-type fermenter with a working vol. of 3-5 l. was used for the continuous culture of Streptococcus lactis and Str. cremoris starter strains. The cells grown in **trypsin**-digested **cheese-whey** or **trypsin**-digested skim-milk, both containing autolysed yeast [1%], were harvested with a Sharples laboratory super-centrifuge resuspended in skim-milk and layer-frozen in liquid N.sub.2. The frozen culture was crushed to a granular free-flowing form which facilitated direct addition to and ready disperison in **cheese** milk. The cultures were stored at - 196.degree.C.
CC P (Milk and Dairy Products)
CT **CHEESE**; CHEESEMAKING; STARTERS; **CHEESE STARTERS**; FROZEN

L6 ANSWER 28 OF 34 FSTA COPYRIGHT 2002 IFIS
AN 1972(12):P1925 FSTA
TI [Reverse osmosis plant for the concentration of **whey**.] Betriebsanlage fuer die Hyperfiltration (Umkehrosmose) zur Konzentrierung von Molke im Betrieb.
AU Madsen, R. F.
CS A/S De Danske Sukkerfabrikker, Nakskov, Denmark
SO Nordeuropaeisk Mejeri-Tidsskrift, (1972), 38 (8) 165-166
DT Journal
LA Danish
AB A brief description is given of a reverse osmosis plant for concentrating 80 t **whey** to 20 t/day, put into operation in May 1972 in the **cheese** factory Val d'Or, in France. The plant consists of 2 sections, each comprising 5 DDS modules with a membrane area of 28 m.sup.2/module. The **whey** concentration is carried out in 24-h batch operations, each being followed by passing water through the system to force out the **whey** concentrate from the modules into storage tanks. The cleaning procedure involves rinsing with water, followed by a detergent solution and water, sterilization with a hypochlorite solution and final rinsing with water. Once a week the system is cleaned with a **trypsin** solution.
CC P (Milk and Dairy Products)
CT **CHEESE**; CHEESEMAKING; CLEANING; CONCENTRATION; EQUIPMENT; REVERSE OSMOSIS; STERILIZATION; **WHEY**; **CHEESE WHEY**; CLEANING ; CONCENTRATION ; REVERSE OSMOSIS ; STERILIZATION ; **WHEY**

L6 ANSWER 29 OF 34 FROSTI COPYRIGHT 2002 LFRA
AN 484947 FROSTI
TI ELISA for differential quantitation of plasmin and plasminogen in **cheese**.
AU Dupont D.; Grappin R.
SO Journal of Dairy Research, 1998, (November), 65 (4), 643-651 (24 ref.) ISSN: 0022-0299
DT Journal
LA English
SL English

AB Plasminogen is a precursor of plasmin, a serine proteinase with an activity similar to that of **trypsin**. Bovine plasmin and plasminogen are thought to have a significant role in proteolysis during **cheese** ripening. This study aimed to improve the ELISA procedure for milk and **cheese** analysis and its application to the determination of bovine plasmin and plasminogen experimental and commercial **cheeses**. The assay used two monoclonal antibodies - one specific for plasminogen and the other cross-reacting with plasmin and plasminogen. The ELISA was used to determine plasmin and plasminogen in semi-hard **cheeses** on a pilot scale, and the values were compared with levels in corresponding **wheys** and unripened **cheeses**. The findings showed that this ELISA could be used for characterizing the proteolysis caused by plasminogen during **cheese** ripening.
SH DAIRY PRODUCTS
CT ANTIBODIES; **CHEESE**; DAIRY PRODUCTS; DEGRADATION; DETERMINATION; ELISA; IMMUNOASSAYS; MONOCLONAL ANTIBODIES; PLASMIN; PLASMINOGEN; PROTEOLYSIS; RIPENING
DED 20 Jan 1999

L6 ANSWER 30 OF 34 FROSTI COPYRIGHT 2002 LFRA
AN 469732 FROSTI
TI Inhibitory activity against plasmin, **trypsin**, and elastase in rennet **whey** and in **cheese** fortified with **whey** protein.
AU Benfeldt C.; Sorensen J.; Petersen T.E.
SO Journal of Dairy Science, 1998, (March), 81 (3), 615-620 (24 ref.)
DT Journal
LA English
SL English
AB A method was developed for examining the activity of proteinase inhibitors in samples of **whey** and **cheese** and for evaluating the effect of **whey** proteins on the proteolytic digestion of casein during **cheese** ripening. The method was used for comparing the activities of protein inhibitors against **trypsin**, elastase, and plasmin in samples of Danbo 45-plus manufactured from milk pasteurized at 72-90 C for 15-60 seconds, the corresponding rennet **whey** fractions and Havarti 45-plus manufactured from milk concentrated by ultrafiltration 1.8-4.6 times. A colorimetric assay showed that incorporation of thermally denatured **whey** proteins into the **cheese** curd by pasteurization resulted in decreased proteinase inhibitory activity against **trypsin** and elastase in Danbo 45-plus and against **trypsin** , elastase and plasmin in the rennet **whey** fractions. Incorporation of **whey** proteins into Havarti 45-plus by ultrafiltration of the **cheese** milk resulted in increased proteinase inhibitory activity against **trypsin** and elastase.
SH DAIRY PRODUCTS
CT **CHEESE**; ELASTASE; PASTEURIZATION; PLASMIN; PROTEINASE INHIBITORS; RENNET **WHEY**; **TRYPSIN**; ULTRAFILTRATION; **WHEY** PROTEIN
DED 23 Jun 1998

L6 ANSWER 31 OF 34 FROSTI COPYRIGHT 2002 LFRA
AN 255794 FROSTI
TI Accelerating the ripening of **cheese** by the addition of proteolytic enzymes. 1. The characteristics of the enzymes.
AU Pahkala E.; Antila V.; Laukkanen M.
SO Meijeritieleellinen Aikakauskirja, 1984, 42 (1), 1-20 (10 ref.)
NTE B.
DT Journal
LA English

SL English; Finnish
AB The characteristics of various proteases derived from Aspergillus or Bacillus microorganisms, pancreas **trypsin** and papain from papaya, all used to accelerate **cheese** ripening, were studied. Proteolytic activity in casein and **whey** protein, endo-, amino-, carboxy- and dipeptidase activity, the effect of pH on caseinolytic activity, electrophoretic effects on casein, effect on growth of Streptococcus thermophilus, Lactobacillus helveticus and Lactobacillus lactis, and side activity causes by lipase and lactase were determined.
CT ACCELERATION; ACTIVITY; **CHEESE**; ENZYMES; ENZYMIC ACTIVITY; INCREASE; PAPAIN; PROPERTIES; PROTEASES; RATE; RIPENING; **TRYPSIN**
DED 30 May 1991

L6 ANSWER 32 OF 34 FROSTI COPYRIGHT 2002 LFRA
AN 140287 FROSTI
TI Soybean-**cheese** product.
IN Peng A.C.
PA Ohio Agricultural Research And Development Centre.
SO United States Patent
PI US 4105803
DT Patent
LA English
CT **CHEESE**; DAIRY PRODUCTS; GLUCONO LACTONE; INHIBITORS; SOYA BEANS; SOYA PRODUCTS; TORYPSIN; **TRYPSIN** INHIBITORS; WHEAT; **WHEY**
DED 1 Oct 1980

L6 ANSWER 33 OF 34 FROSTI COPYRIGHT 2002 LFRA
AN 122392 FROSTI
TI Physicochemical and functional properties of positively charged derivatives of bovine beta-lactoglobulin.
AU Mattarella N.L.; Richardson T.
SO Journal of Agricultural and Food Chemistry, 1983, 31 (5), 972-8 (22 ref.)
DT Journal
LA English
SL English
AB A discussion is given which examines beta-lactoglobulin derivatives for solubility, UV difference spectra, ester group stability to pH and enzymes, **trypsin** and pepsin proteolysis and emulsifying characteristics and hydrophobicity. Beta lactoglobulin is the major protein derived from **cheese whey**.
CT ACTIVITY; APPLICATIONS; BETA LACTOGLOBULIN; DETERMINATION; EMULSIFICATION; EMULSIFYING ACTIVITY; FUNCTIONAL PROPERTIES; HYDROPHOBICITY; LACTOGLOBULIN; MODIFIED; MODIFIED PROTEINS; PHOTOMETRY; PHYSICAL PROPERTIES; PROPERTIES; PROTEINS; SOLUBILITY; SPECTROSCOPY; STABILITY; **WHEY**
DED 10 Jan 1984

L6 ANSWER 34 OF 34 FROSTI COPYRIGHT 2002 LFRA
AN 47441 FROSTI
TI A cottage **cheese whey** product as a precipitant for soy protein.
AU AGUILERA J.M.; KOSIKOWSKI F.V.
SO Journal of Dairy Science, 1978, 61 (11), 1548-56 (18 ref.).
DT Journal
CT ABSORPTION; ACIDS; ACTIVITY; APPLICATIONS; BINDING; BINDING CAPACITY; **CHEESE**; COMPOSITION; CONCENTRATES; COTTAGE **CHEESE**; EMULSIFICATION; EMULSIFYING CAPACITY; ENZYMES; ENZYMIC ACTIVITY; EVALUATION; EXTRACTION; FILTRATION; FOAMING; FOAMING CAPACITY; GELATION; INHIBITORS; ISOLATES; NITROGEN SOLUBILITY INDEX; NITROGEN VOLUBILITY INDEX; PH; PHYSICAL PROPERTIES; PRECIPITATION; PRODUCTION; PROPERTIES; PROTEIN ISOLATES; PROTEINS; SORPTION CAPACITY; SOYA PRODUCTS; SOYA

PROTEIN; SOYA PROTEINS; **TRYPSIN** INHIBITORS; VEGETABLE PROTEIN; VEGETABLE PROTEINS; WATER; WATER BINDING; WATER BINDING CAPACITY; WATER SORPTION; WATER SORPTION CAPACITY; WETTABILITY; **WHEY**
DED 1 Oct 1980

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L7 25 L1 AND L2 AND L3

=> d 1-25 all

L7 ANSWER 1 OF 25 FSTA COPYRIGHT 2002 IFIS
AN 2002:P0884 FSTA
TI **Cheese** yield enhancing method.
IN Kumazawa, Y.; Sakamoto, J.; Kuraishi, C.; Nio, N.; Sakaguchi, S.
PA Ajinomoto Co. Inc.; Ajinomoto, Tokyo, Japan
SO European Patent Application, (2002)
PI EP 1186238 A2
PRAI JP 2000-263616 20000802
DT Patent
LA English
AB A cheesemaking method giving improved **cheese** yield is described. A partial hydrolysate of **whey** protein is added to the cheesemaking milk; the resulting mixture is treated with **transglutaminase** (protein-glutamine .gamma.-glutamyltransferase); this mixture is then treated with a milk coagulating enzyme to yield a curd; and this curd is further procesed to **cheese**. This process increases the yield of **cheese** curd (and hence **cheese**) from the milk, and enhances **cheese** quality.
CC P (Milk and Dairy Products)
CT CHEESEMAKING; PATENTS; PROTEINS MILK; TRANSFERASES; **WHEY**; PROTEIN-GLUTAMINE Nd -GLUTAMYLTRANSFERASES; **WHEY PROTEINS**

L7 ANSWER 2 OF 25 FSTA COPYRIGHT 2002 IFIS
AN 2002:P0501 FSTA
TI **Cheese whey** protein having improved texture process for producing the same and use thereof.
IN Soeda, T.
PA Soeda, Kawasaki-shi, Japan
SO United States Patent Application Publication, (2001)
PI US 2001053398 A1
PRAI JP 1998-176988 19980624
DT Patent
LA English
AB A process for producing a modified **cheese whey** protein is described. Initially, the pH of an aqueous **whey** protein solution is made alkaline and/or the solution is heated. Then, the **whey** protein is treated with a **transglutaminase** (protein-glutamine .gamma.-glutamyl transferase).
CC P (Milk and Dairy Products)
CT PATENTS; PROTEINS MILK; **WHEY**; MODIFICATION; **WHEY PROTEINS**

L7 ANSWER 3 OF 25 FSTA COPYRIGHT 2002 IFIS
AN 2001(12):P1840 FSTA
TI Incorporation of **whey** into process **cheese**.
IN Xiao-Qing Han; Spradlin, J. E.
PA Kraft Foods, Northfield, IL, USA
SO United States Patent, (2001)
PI US 6270814 B1
PRAI US @@@@-325220 19990603
DT Patent

LA English
AB A processed **cheese** product is described, made with **cheese** and dairy liquid containing casein, **whey** protein and lactose. A portion of the casein and/or **whey** protein in the dairy liquid is crosslinked via .gamma.-carboxyl-.epsilon.-amino linkages before being combined with the **cheese**. The lactose in the processed **cheese** product remains dissolved in the aqueous phase upon storage. The process used to prepare the **cheese** includes a step in which the dairy liquid is exposed to **transglutaminase** under conditions which allow crosslinking of casein and/or **whey** protein to take place. Also described is the process for manufacture of the **cheese** product, which includes replacement of some of the **cheese** proteins with the crosslinked protein conjugates in the dairy liquid. Crystallization of lactose in the processed **cheese** is inhibited, resulting in higher lactose levels than those normally introduced into **cheese** products.
CC P (Milk and Dairy Products)
CT CASEIN; **CHEESE VARIETIES**; LACTOSE; PATENTS; PROTEINS MILK; **WHEY**; **PROCESSED CHEESE**; **WHEY PROTEINS**

L7 ANSWER 4 OF 25 FSTA COPYRIGHT 2002 IFIS
AN 2001(08):P1370 FSTA
TI Process for incorporating **whey** proteins into **cheese** using **transglutaminase**.
IN Xiao-Qing Han; Spradlin, J. E.
PA Kraft Foods Inc.; Kraft Foods, Northfield, IL, USA
SO United States Patent, (2001)
PI US 6224914 B1
PRAI US @@@@-325217 19990603
DT Patent
LA English
AB A **cheese** curd is described which contains a substantial proportion of **whey** protein products and curded proteins originating from a dairy liquid containing casein. Also described is a process for making the **cheese** curd, which involves contact between a dairy liquid fortified with **whey** protein and a **transglutaminase** (protein-glutamine .gamma.-glutamyltransferase), providing a modifed dairy liquid containing **whey** protein products. This liquid is then blended with a second dairy liquid and renneted to provide a curd in which a high proportion of **whey** protein products is retained. The curd can then be used to prepare **cheese** products, including soft, semi-soft and hard **cheeses** which contain substantial amounts of **whey** protein products and curded proteins originating from dairy liquids.
CC P (Milk and Dairy Products)
CT CHEESEMAKING; CURD; PATENTS; PROTEINS MILK; TRANSFERASES; **WHEY**; **CHEESE CURD**; PROTEIN-GLUTAMINE Nd -GLUTAMYLTRANSFERASES; **WHEY PROTEINS**

L7 ANSWER 5 OF 25 FSTA COPYRIGHT 2002 IFIS
AN 2000(05):G0212 FSTA
TI **Cheese whey** protein having improved texture, process for producing the same and use thereof.
IN Soeda, T.
PA Ajinomoto Co. Inc.; Ajinomoto, Tokyo, Japan
SO European Patent Application, (1999)
PI EP 966887 A1
PRAI JP 1998-176988 19980624
DT Patent
LA English
AB A process is described for modification of **cheese whey** protein by partially denaturing the protein and treating it with

**transglutaminase**. The protein is subjected to pH adjustment and preheating before **transglutaminase** treatment. When the treated **cheese whey** protein is subsequently heated at .gtoreq.100.degree.C, insolubilization of the protein by aggregation does not occur. A gel made from the treated **whey** protein or foods made with this protein can have excellent texture and maintain good emulsifiability, foamability and water holding capacity.

CC G (Catering, Speciality and Multicomponent Foods)

CT FUNCTIONAL PROPERTIES; PATENTS; PROTEINS MILK; TEXTURE; TRANSFERASES; **WHEY**; MODIFICATION; PROTEIN-GLUTAMINE Nd -GLUTAMYLTRANSFERASES; **WHEY PROTEINS**

L7 ANSWER 6 OF 25 FSTA COPYRIGHT 2002 IFIS

AN 1999(09):S1427 FSTA

TI Ingredients that get to the meat of the matter.

AU Pszczola, D. E.

SO Food Technology, (1999), 53 (4) 62-64, 66, 68
ISSN: 0015-6639

DT Journal

LA English

AB Developments in additives for improving quality of meat products are described. Aspects considered include: **whey** protein films for improved quality (moisture, freshness, cooking yields and integrity) of hot dogs and processed meats; dried plum puree for retained moisture and improved freshness in meat products (including hamburgers, hot dogs, turkey meatballs, turkey sausage and pizza toppings); coconut concentrate for improved flavour development in savoury applications (e.g. sauces, dressings/dips, marinades, glazes and soups); use of Streptoverticillium mobaraense **transglutaminase** for restructuring of meat, poultry and fish products (including restructured steak, boneless ham, pork loin ham, roasted pork, hot dogs, sausages, nuggets and seafood pate) for improved firmness, moisture retention, texture and mouthfeel; textured wheat proteins for use as extenders and replacers to reduce costs and improve textures and flavour profiles in meat and poultry products (including chicken, beef and fish patties, chicken salad, meatballs, meat loaf, chicken nuggets, beef mince, bologna, sausage, jerky, surimi); hydrophobic surface coating to improve melt and flow properties of low fat/fat free **cheese** melts for use on patties; honey for reduced oxidation and improved flavour quality in meat and poultry; salt alternative for reduced sodium levels in meat and poultry products; and labelling of organic meat and poultry.

CC S (Meat, Poultry and Game)

CT ADDITIVES; MEAT PRODUCTS; POULTRY MEAT; DEVELOPMENTS; POULTRY PRODUCTS; QUALITY

L7 ANSWER 7 OF 25 FSTA COPYRIGHT 2002 IFIS

AN 1997(11):P0182 FSTA

TI A process for making **cheese**.

IN Budtz, P.

PA Novo Nordisk A/S; Novo Nordisk, Novo Alle, DK-2880 Bagsvaerd, Denmark

SO PCT International Patent Application, (1997)

PI WO 9701961 A1

PRAI DK 1995-764 19950630

DT Patent

LA English

AB A process for manufacturing **cheese** and the products obtained from this process are described. **Transglutaminase** is added to cheesemaking milk and incubated with a rennet so as to cause clotting. **Whey** is separated from the coagulate and the coagulate is processed into **cheese**. The use of **transglutaminase** for maintaining proteins in **cheese** during a conventional cheesemaking process is also described. [From En summ.]

CC P (Milk and Dairy Products)
CT CHEESEMAKING; ENZYMES; PATENTS; PROCESSING; TRANSFERASES; **TRANSGLUTAMINASES**

L7 ANSWER 8 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 579162 FROSTI
TI **Cheese** yield enhancing method.
IN Kumazawa Y.; Sakamoto J.; Kuraishi C.; Nio N.; Sakaguchi S.
PA Ajinomoto Co. Inc.
SO European Patent Application
PI EP 1186238 A2
AI 20010802
PRAI Japan 20000831
DT Patent
LA English
SL English
AB A process for **cheese** manufacture is described, with use of **whey** protein and the enzyme **transglutaminase** (TG). Addition of **whey** protein and TG is claimed to improve yield of **cheese** curd. A **whey** protein partial hydrolysate is added to the raw milk, followed by TG-catalysed coagulation.
SH DAIRY PRODUCTS
CT **CHEESE**; **CHEESE** CURD; CHEESEMAKING; DAIRY PRODUCTS; ENZYMES; EUROPEAN PATENT; MILK PROTEIN; PATENT; PRODUCTION; PROTEIN; **TRANSGLUTAMINASE**; **WHEY** PROTEIN; YIELD
DED 9 Apr 2002

L7 ANSWER 9 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 563782 FROSTI
TI Incorporation of **whey** into process **cheese**.
IN Han X.-Q.; Spradlin J.E.
PA Kraft Foods Inc.
SO United States Patent
PI US 6270814 B 20010807
AI 19990603
NTE 20010807
DT Patent
LA English
SL English
AB A processed **cheese** has increased content of **whey** proteins and lactose. The **whey** and milk proteins are crosslinked through the action of **transglutaminase** prior to blending with **cheese**.
SH DAIRY PRODUCTS
CT **CHEESE**; CROSS LINKING; DAIRY PRODUCTS; ENZYMES; MILK PROTEIN; PATENT; PROCESSED **CHEESE**; PROTEIN; **TRANSGLUTAMINASE**; US PATENT; **WHEY** PROTEIN
DED 25 Sep 2001

L7 ANSWER 10 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 560530 FROSTI
TI Process for making **cheese**.
IN Budtz P.
PA Novozymes A/S Patents
SO United States Patent
PI US 6258390 B 20010710
WO 9701961 19970123
AI 19971215
PRAI Denmark 19950630
NTE 20010710
DT Patent
LA English

SL English
AB The patent describes a method for making **cheese** from cheesemilk that has been pretreated with an enzyme, which is able to maintain proteins in the **cheese** material during the **cheese** -making process, so that increased yields of **cheese** are obtained. The enzyme used is **transglutaminase**, which is capable of increasing the amount of protein left in the coagulated **cheese** material after incubation with rennet, and after the separation of **whey** from coagulate. The method involves adding **transglutaminase** to cheesemilk and incubating for a suitable period; incubating with rennet to cause clotting; separating the **whey** from the coagulate; and processing the coagulate into **cheese**.
SH DAIRY PRODUCTS
CT **CHEESE**; DAIRY PRODUCTS; ENZYMES; INCREASE; PATENT; PRODUCTION; PROTEIN; QUANTITY; **TRANSGLUTAMINASE**; US PATENT; YIELD
DED 10 Aug 2001

L7 ANSWER 11 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 559885 FROSTI
TI **Cheese** curd made using **transglutaminase** and a non-rennet protease.
IN Han X.-Q.; Spradlin J.E.
PA Kraft Foods Inc.
SO United States Patent
PI US 6242036 B 20010605
AI 20000605
NTE 20010605
DT Patent
LA English
SL English
AB **Cheese** curd made using **transglutaminase** and a non-rennet protease is described. A dairy liquid containing casein and **whey** protein is treated with **transglutaminase** and a non-rennet protease. The **cheese** curd obtained contains most of the **whey** protein products. The process may also be used to prepare **cheese** that contains **whey** protein products.
SH DAIRY PRODUCTS
CT CASEIN; **CHEESE**; **CHEESE** CURD; DAIRY PRODUCTS; ENZYMES; MILK PROTEINS; NON RENNET PROTEINASES; PATENT; PROTEINASES; PROTEINS; **TRANSGLUTAMINASE**; US PATENT; **WHEY** PROTEIN PRODUCTS
DED 7 Aug 2001

L7 ANSWER 12 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 555512 FROSTI
TI Process for incorporating **whey** proteins into **cheese** using **transglutaminase**.
IN Han X.-Q.; Spradlin J.E.
PA Kraft Foods Inc.
SO United States Patent
PI US 6224914 B
AI 19990603
DT Patent
LA English
SL English
AB A **cheese** curd contains a substantial amount of **whey** protein products and curded proteins originating from a dairy liquid comprising casein. The **whey** protein is modified using **transglutaminase**, which is then blended with a second dairy liquid and renneted to produce the curd. The curd can be used to prepare **cheese** products.
SH DAIRY PRODUCTS

CT CASEIN; **CHEESE** PRODUCTS; CURD; DAIRY PRODUCTS; ENZYMES; MILK PROTEIN; MILK PROTEINS; PATENT; PROTEIN; PROTEINS; **TRANSGLUTAMINASE**; US PATENT; **WHEY** PROTEINS
DED 14 Jun 2001

L7 ANSWER 13 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 543770 FROSTI
TI Incorporation of **whey** into process **cheese**.
IN Han X.-Q.; Spradlin J.E.
PA Kraft Foods Inc.
SO European Patent Application
PI EP 1057412 A2 20001206
AI 20000602
PRAI United States 19990603
NTE 20001206
DT Patent
LA English
SL English
AB A processed **cheese** has increased content of **whey** proteins and lactose. The **whey** and milk proteins are crosslinked through the action of **transglutaminase** prior to blending with **cheese**.
SH DAIRY PRODUCTS
CT **CHEESE**; CROSS LINKING; DAIRY PRODUCTS; ENZYMES; EUROPEAN PATENT; MILK PROTEIN; PATENT; PROCESSED **CHEESE**; PROTEIN; **TRANSGLUTAMINASE**; **WHEY** PROTEIN
DED 2 Feb 2001

L7 ANSWER 14 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 543769 FROSTI
TI Process for incorporating **whey** proteins into **cheese** using **transglutaminase**.
IN Han X.-Q.; Spradlin J.E.
PA Kraft Foods Inc.
SO European Patent Application
PI EP 1057411 A2 20001206
AI 20000602
PRAI United States 19990603
NTE 20001206
DT Patent
LA English
SL English
AB A **cheese** curd contains a substantial amount of **whey** protein products and curded proteins originating from a dairy liquid comprising casein. The **whey** protein is modified using **transglutaminase**, which is then blended with a second dairy liquid and renneted to produce the curd. The curd can be used to prepare **cheese** products.
SH DAIRY PRODUCTS
CT CASEIN; **CHEESE** PRODUCTS; CURD; DAIRY PRODUCTS; ENZYMES; EUROPEAN PATENT; MILK PROTEIN; PATENT; PROTEINS; **TRANSGLUTAMINASE** ; **WHEY** PROTEINS
DED 2 Feb 2001

L7 ANSWER 15 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 543014 FROSTI
TI Process for making **cheese** using **transglutaminase** and a non-rennet protease.
IN Anon.
PA Kraft Foods Inc.
SO European Patent Application
PI EP 1048218 A2

AI 20000419
PRAI United States 19990427
DT Patent
LA English
SL English
AB A process for making **cheese** using **transglutaminase** and a non-rennet protease is described. Dairy liquids containing casein and **whey** protein may be treated with **transglutaminase** and a non-rennet protease to give a **cheese** curd containing a substantial proportion of **whey** protein products. **Cheeses**, soft, semi-soft or hard, may also be prepared using the process of the invention.
SH DAIRY PRODUCTS
CT **CHEESE**; CHEESEMAKING; DAIRY PRODUCTS; ENZYMES; EUROPEAN PATENT; NON RENNET PROTEASES; PATENT; PROCESSING; PROTEINASES; **TRANSGLUTAMINASE**; **WHEY** PROTEIN PRODUCTS
DED 25 Jan 2001

L7 ANSWER 16 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 539675 FROSTI
TI **Cheese whey** protein having improved palatability, its production and utilisation thereof.
IN Soeda T.
PA Ajinomoto Co. Inc.
SO Japanese Patent Application
PI JP 2000004786 A 20000111
AI 19980624
NTE 20000111
DT Patent
LA Japanese
SL English
AB This **cheese whey** protein has improved physical properties (emulsifying, foaming, moisture retention, palatability). It has a smooth mouthfeel. A solution of **whey** is subjected to a **transglutaminase** treatment under specified conditions.
SH DAIRY PRODUCTS
CT DAIRY PRODUCTS; FUNCTIONAL PROPERTIES; JAPANESE PATENT; MILK PROTEIN; PATENT; PROTEIN; **WHEY** PROTEIN
DED 7 Dec 2000

L7 ANSWER 17 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 533416 FROSTI
TI Process for making **cheese** using **transglutaminase** and a non-rennet protease.
IN Han X.-Q.; Spradlin J.E.
PA Kraft Foods Inc.
SO United States Patent
PI US 6093424 B 20000725
AI 19990427
NTE 20000725
DT Patent
LA English
SL English
AB A **cheese** curd contains protein products originating from a dairy liquid containing casein and **whey** protein. The liquid is subjected to action from a **transglutaminase** and a non-rennet protease, resulting in a high proportion of **whey** protein products being retained in the **cheese** curd.
SH DAIRY PRODUCTS
CT **CHEESE**; CHEESEMAKING; CURD; DAIRY PRODUCTS; ENZYMES; MILK PROTEINS; PATENT; PROTEINASES; PROTEINS; **TRANSGLUTAMINASES**; US PATENT

DED 3 Oct 2000

L7 ANSWER 18 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 519239 FROSTI
TI **Cheese whey** protein having improved texture, process for producing the same and use thereof.
IN Soeda T.
PA Aijinomoto Co. Inc.
SO European Patent Application
PI EP 966887 A1
AI 19990623
PRAI Japan 19980624
DT Patent
LA English
SL English
AB A process for modifying **cheese whey** protein to improve its texture is disclosed, which comprises partially denaturing the protein and treating it with a **transglutaminase**. The **whey** protein is preferably subjected to alkali treatment and/or preheat treatment prior to the reaction with the **transglutaminase**. The final product is preferably in the form of a powder to increase its storage stability and to provide a convenient food ingredient.
SH DAIRY PRODUCTS
CT DAIRY PRODUCTS; DEGRADATION; DENATURATION; ENZYMES; EUROPEAN PATENT; IMPROVEMENT; INGREDIENTS; MILK PROTEIN; MODIFICATION; PATENT; PROTEIN; SENSORY PROPERTIES; TEXTURE; **TRANSGLUTAMINASE**; **WHEY** PROTEIN
DED 2 May 2000

L7 ANSWER 19 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 503364 FROSTI
TI Milk **whey** protein-containing powder and process food obtained by using the same.
IN Soeda T.; Yamazaki K.; Tanno H.; Kuhara C.
PA Ajinomoto Co. Inc.
SO United States Patent
PI US 5907031 B
AI 19970801
PRAI Japan 19960801
DT Patent
LA English
SL English
AB **Whey** protein is a waste product that is produced during **cheese** manufacture. It can be concentrated and used as a food additive. This patent describes an improved **whey**-protein powder and the method for manufacturing it. The **whey** protein is treated with **transglutaminase**, heated, which deactivates the enzyme, and dried. It has good functional properties; e.g., it acts a gelling agent and emulsifier, and produces an end product with a good texture and mouthfeel.
SH DAIRY PRODUCTS
CT DAIRY PRODUCTS; ENZYMES; MILK PROTEIN; PATENT; PROCESSING; PROTEIN; **TRANSGLUTAMINASE**; US PATENT; **WHEY** PROTEIN
DED 21 Sep 1999

L7 ANSWER 20 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 481915 FROSTI
TI Bulletin of the International Dairy Federation, No.332.
AU International Dairy Federation
SO Published by: IDF, Brussels, 1998, 68pp
IDF Bulletin, No.332
DT Book

LA English
AB This Bulletin contains the proceedings of the Conference of Commission B on 'The use of enzymes in dairying' held in Reykjavik, Iceland in 1997. These proceedings contain the following papers: milk-clotting activity of various rennets and coagulants; background and information regarding IDF standards; the mechanism of rennet retardation in **cheese**; the enzymatic breakdown of milk proteins during **cheese** ripening; the influence of heat treatment of milk on the activities of the indigenous milk enzymes alkaline phosphatase and adenosine deaminase; the inhibition of bacterial growth in **whey** by the activation of lactoperoxidase; and the properties and potential fields of application of **transglutaminase** preparations in dairying. The Bulletin also contains two further papers. The first is a literature survey on the application of Fourier-transform infrared spectroscopy in milk-product analysis. The second paper is entitled Fourier-transform infrared spectroscopy: a new concept for milk and milk-product analysis.
CT ADENOSINE DEAMINASE; ALKALINE PHOSPHATASE; ANALYSIS; BACTERIA; **CHEESE**; COAGULANTS; COAGULATION; DAIRY INDUSTRY; DAIRY PRODUCTS; ENZYMES; FOOD INDUSTRY; FOURIER TRANSFORM SPECTROSCOPY; HEATING; IDF; INHIBITION; LACTOPEROXIDASE; MICROORGANISMS; MILK; MILK PRODUCTS; PROTEINS; RENNET; REVIEW; RIPENING; SPECTROSCOPY; STANDARDS; **TRANSGLUTAMINASE**; **WHEY**
DED 10 Dec 1998

L7 ANSWER 21 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 476381 FROSTI
TI Milk **whey** protein-containing powder and processed food using the same.
IN Soeda T.; Yamazaki K.; Tanno H.; Kuhara T.
PA Ajinomoto Co. Inc.
SO Japanese Patent Application
PI JP 10042792 A 19980217
AI 19960801
NTE 19980217
DT Patent
LA Japanese
SL English
AB This milk **whey** protein-containing powder retains its gel-forming ability and emulsion-forming capacity. The production method is described. A solution containing **whey** protein, such as the by-product of **cheese** production, is acted upon by a **transglutaminase**. The solution is then heated to 100-140 C, followed by drying.
SH ADDITIVES
CT DAIRY PRODUCTS; JAPANESE PATENT; MILK PROTEIN; MILK PROTEIN CONCENTRATE; PATENT; PRODUCTION; PROTEIN; PROTEIN PRODUCTS; **WHEY** PRODUCTS; **WHEY** PROTEIN; **WHEY** PROTEIN CONCENTRATE
DED 23 Sep 1998

L7 ANSWER 22 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 468823 FROSTI
TI A process for making **cheese**.
IN Budtz P.
PA Novo Nordisk A/S
SO European Patent Application
PI EP 835061 A1
WO 9701961 19970123
AI 19960625
PRAI Denmark 19950630
DT Patent
LA English
SL English

AB The patent describes a method for making **cheese** from cheesemilk that has been pretreated with an enzyme, which is able to maintain proteins in the **cheese** material during the **cheese** -making process, so that increased yields of **cheese** are obtained. The enzyme used is **transglutaminase**, which is capable of increasing the amount of protein left in the coagulated **cheese** material after incubation with rennet, and after the separation of **whey** from coagulate. The method involves adding **transglutaminase** to cheesemilk and incubating for a suitable period; incubating with rennet to cause clotting; separating the **whey** from the coagulate; and processing the coagulate into **cheese**.
SH DAIRY PRODUCTS
CT **CHEESE**; ENZYMES; EUROPEAN PATENT; INCREASE; PRODUCTION; PROTEIN; QUANTITY; **TRANSGLUTAMINASE**; YIELDS
DED 9 Jun 1998

L7 ANSWER 23 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 455111 FROSTI
TI Method for production of a non acidified edible gel on milk basis.
IN Budolfsen G.; Nielsen P.M.
PA Novo Nordisk A/S
SO United States Patent
PI US 5670192 B 19970923
AI 19940318
PRAI Denmark 19930319
NTE 19970923
DT Patent
LA English
SL English
AB The production of an edible gel with good functional and/or sensory properties is disclosed, which can be used as a mousse or pudding without requiring the addition of emulsifying or stabilizing agents. The gel is obtained by adding **transglutaminase** and rennet to milk, followed by a heat treatment. The rennet does not exert its normal function and cause a separation of the milk into a **cheese** phase and a **whey** phase, but produces a single-phase gel product.
SH DAIRY PRODUCTS
CT DAIRY DESSERTS; DAIRY PRODUCTS; DESSERTS; EDIBLE GELS; GELS; RENNET; **TRANSGLUTAMINASE**; US PATENT
DED 18 Nov 1997

L7 ANSWER 24 OF 25 FROSTI COPYRIGHT 2002 LFRA
AN 426458 FROSTI
TI A process for making **cheese**.
IN Budtz P.
PA Novo Nordisk A/S
SO PCT Patent Application
PI WO 9701961 A1
AI 19960625
PRAI Denmark 19950630
DT Patent
LA English
SL English
AB The patent describes a method for making **cheese** from cheesemilk that has been pre-treated with an enzyme, which is able to maintain proteins in the **cheese** material during the **cheese** -making process, so that increased yields of **cheese** are obtained. The enzyme used is **transglutaminase**, which is capable of increasing the amount of protein left in the coagulated **cheese** material after incubation with rennet, and after the separation of **whey** from coagulate. The method involves adding

**transglutaminase** to cheesemilk and incubating for a suitable period; incubating with rennet to cause clotting; separating the **whey** from the coagulate; and processing the coagulate into **cheese**.

SH DAIRY PRODUCTS

CT **CHEESE**; INCREASE; PCT PATENT; PRODUCTION; **TRANSGLUTAMINASE**; YIELDS

DED 1 Apr 1997

L7 ANSWER 25 OF 25 FROSTI COPYRIGHT 2002 LFRA

AN 418131 FROSTI

TI A cross-linking approach for studying mutual spatial relationships of protein components in **cheese**.

AU Righi A.; Turin L.; Bonomi F.

SO Milchwissenschaft, 1996, 51 (8), 442-446 (20 ref.)

DT Journal

LA English

SL English; German

AB Cross-linkages between amino acid side chains of proteins may be formed by the enzyme **transglutaminase** or by other molecules containing two reactive groups. This paper reports the use of glutaraldehyde for cross-linking casein micelle protein components in milk and in commercial **cheese** samples. In raw milk, alpha(s)-casein and beta-casein had similar reactivities with glutaraldehyde, but **whey** proteins were unreactive. In the **cheeses** studied (Mozzarella, Caciotta, Taleggio, and processed **cheese**), beta-casein and para-kappa-casein were sensitive indicators of changes in micellar structure during **cheese** ripening.

SH DAIRY PRODUCTS

CT CASEIN; CASEIN MICELLES; **CHEESE**; CROSS LINKING; GLUTARALDEHYDE; MICELLES; MILK; MILK PROTEIN; MILK PROTEINS; PROTEINS; RIPENING; STRUCTURE; TYPE

DED 19 Sep 1996

INCL INCLM: 514/425.000
INCLS: 514/675.000; 514/693.000
NCL NCLM: 514/425.000
NCLS: 514/675.000; 514/693.000
IC [6]
ICM: A61K031-40
ICS: A61K031-12; A61K031-11
EXF 424/480; 436/829; 514/675; 514/693; 514/425
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 8 OF 9 USPATFULL
AN 97:18075 USPATFULL
TI Gene encoding **transglutaminase** derived from fish
IN Yasueda, Hisashi, Kawasaki, Japan
Nakanishi, Kazuo, Kawasaki, Japan
Motoki, Masao, Kawasaki, Japan
Nagase, Kazuo, Kawasaki, Japan
Matsui, Hiroshi, Kawasaki, Japan
PA Ajinomoto Co., Inc., Tokyo, Japan (non-U.S. corporation)
PI US 5607849 19970304
AI US 1996-583799 19960105 (8)
RLI Continuation of Ser. No. US 1993-164839, filed on 9 Dec 1993, now patented, Pat. No. US 5514573 which is a continuation of Ser. No. US 1993-4729, filed on 14 Jan 1993, now abandoned
PRAI JP 1992-5166 19920114
JP 1992-199803 19920727
JP 1992-328010 19921208
DT Utility
FS Granted
LN.CNT 2133
INCL INCLM: 435/193.000
INCLS: 435/320.100; 435/183.000; 435/069.100; 435/252.330; 435/254.210; 435/254.110; 435/252.310; 536/023.200
NCL NCLM: 435/193.000
NCLS: 435/069.100; 435/183.000; 435/252.310; 435/252.330; 435/254.110; 435/254.210; 435/320.100; 536/023.200
IC [6]
ICM: C12N009-10
ICS: C12N005-10; C12N015-54; C12N015-63
EXF 536/23.2; 435/69.1; 435/240.2; 435/320.1; 435/193; 435/183
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 9 OF 9 USPATFULL
AN 96:38797 USPATFULL
TI Gene encoding **transglutaminase** derived from fish
IN Yasueda, Hisashi, Kawasaki, Japan
Nakanishi, Kazuo, Kawasaki, Japan
Motoki, Masao, Kawasaki, Japan
Nagase, Kazuo, Kawasaki, Japan
Matsui, Hiroshi, Kawasaki, Japan
PA Ajinomoto Co., Inc., Tokyo, Japan (non-U.S. corporation)
PI US 5514573 19960507
AI US 1993-164839 19931209 (8)
RLI Continuation of Ser. No. US 1993-4729, filed on 14 Jan 1993, now abandoned
PRAI JP 1992-5166 19920114
JP 1992-199803 19920727
JP 1992-328010 19921208
DT Utility
FS Granted
LN.CNT 2105
INCL INCLM: 435/193.000

INCLS: 435/240.200; 435/320.100; 435/183.000; 435/069.100; 536/023.200
NCL NCLM: 435/193.000
NCLS: 435/069.100; 435/183.000; 435/320.100; 536/023.200
IC [6]
ICM: C12N009-10
ICS: C12N005-10; C12N015-54; C12N015-63
EXF 536/23.2; 435/69.1; 435/240.2; 435/252.3; 435/320.1; 435/193; 435/183
CAS INDEXING IS AVAILABLE FOR THIS PATENT.